ECOTOX DATA ENTRY PROCEDURES (AQUIRE)

AQUIRE Data Entry (AQMOD) Overview

Support Document #75

The entry of AQUIRE data are facilitated by the AQMOD (aquire MODifications) data entry software. Data fields are designed to allow for user/reviewer readability while permitting the software to search and retrieve. Appendix A lists all of the AQMOD data fields.

In addition to the fields listed in Appendix A, the reference, chemical and species files are independently maintained to support the AQMOD software. All entries to these files are manually verified for accuracy. The files must undergo updating procedures before the data are available for use by the AQMOD software. There is a numerical link between the data file (reference number, CAS#, species number) and the AQMOD software that allows the integration of additional data (e.g., first author, chemical name, species Latin name).

For most of the fields, the AQMOD software verifies the entry against a data file of valid codes (see http://ontario.ecodev.com/aquire/aqmod_functional.htm for more information). These files are compiled and maintained independently of AQMOD software. The files may be edited using valid codes database tables by staff assigned to do so.

New codes are verified as valid by the EPA Database Coordinator. Once edited, all valid codes are immediately available for use in the AQMOD software.

Computerized quality assurance checks are performed on fields that contain numbers to assure that the mean values fall within the range. The data entry software will not allow entry of any record that does not meet the five minimal criteria for inclusion (see ECOTOX Review of Literature for a discussion of these criteria).

Text fields are not subject to software validation, but verified by a reviewer. Text fields hold supplementary information and are not ECOTOX searchable fields, although some may be retrieved as output fields.

Data Entry Format Rules

A **GREEN** pen **must** be used to record the AQMOD location number (LOC #), on the coding sheet. The LOC# is is generated by the program, and appears at the top of the data entry screen. The location number is recorded on the AQUIRE coding sheet to the left of the data record, in the LOC # field.

Periods are not entered into any AQMOD data field, except when entering a decimal point for numerical data. Commas may be entered to separate entries within a text data field. When entering **numbers with units** use the format of the following examples: 65(60-70) G or 65 G. When entering **statistics data**, there are no spaces (e.g., p<0.05-0.001).
The following are hyphenated in the REMARKS section:

- Half-life

- Foot-candles
- Post-treatment...or abbreviated as post-trtmt
- Post-exposure, pre-exposure

Also in the REMARKS section:

- Pretreatment is one word...or abbreviated as prtrtmt
- *In vitro* is two words
- Tap water and sea water, are two words. Saltwater and freshwater are one word.
- Sulphate and sulphite are to be spelled as sulfate or sulfite.

All entries are capitalized, with the exception of the RADIOLABEL field, ION fields and the UNIT OF MEASURE fields, all of which have pop down boxes to choose the correct code.

Within text fields, chemical formats such as $CuSO_4 \bullet 5H_2O$, are entered as "CUSO4.5H2O." The format 24°C is entered as "24 C."

If the entry into a text field does not fit, a backslash (/) is added to the end of that field and the entry is continued in the ADDITIONAL REMARK section followed by a double-slash (e.g. LIFESTG/12 MM//).

All REMARKS should have an abbreviated remark header for each field(s) (See Abbreviations, Appendix A) continued followed by a single slash (/) and ended with a double slash (//).

All REMARKS should run together (e.g. CONC/ONLY CONC TESTED//HARD/FROM GRAPH//SITE/GI, BL, LI, IN, SH//)

Data Entry Access and Menus

To access the AQMOD Database, select the AQMOD icon which is placed on the computer by programming staff.

Data Entry Screens

Figure 1. AQUIRE Data entry opening screen

To start data entry, select one of the following options (screen shown in Figure1):

AQUIRE Data Entry

File Action View Query Admin Help

View | Edit | Insert | Un/Delete | Find AQUIRE Record: | Go! | Print

AquireLocation	Status	ReferenceNumber	SpeciesNumber	TestCAS	TestGrade	TestPurity	Endpoint	Effect	Measurement	Tissue	Stud
2	Unchanged	2358	1	39227617		NR	NR	ACC	GACC		
3	Unchanged	2657	97	7733020		NR	NR	MOR/	MORT	NR	
4	Unchanged	6142	321	108952		NR	LC100*	MOR	MORT	NR	
5	Unchanged	2742	1469	10361372		NR	NR	MOR	HTCH	NR	
6	Unchanged	885	6	1320189		NR	LC50	MOR	MORT	NR	
7	Unchanged	873	25	7783064		NR	LC50*	MOR	MORT	NR	
8	Unchanged	8082	2	11118722		NR	LC50	MOR	MORT	NR	
9	Unchanged	8082	2	11118722		NR	LC50	MOR	MORT	NR	
10	Unchanged	885	6	8030306		NR	LC50	MOR	MORT	NR	

Select the "INSERT" button to add a new record and to obtain a LOCATION number for that entry.

Selecte the "EDIT" button to modify data in a previously entered record. Enter the LOCATION number into the "*Find AQUIRE Record*" field and enter or click on the "Go" button.

Select the "VIEW" button to review a selected record.

Select the "UN/DELETE" button to DELETE or RESTORE a record. This feature allows the user to restore a record without having to re-enter the data.

Select the "PRINT" button to print one or more record numbers. This feature is useful to create reports for specific records needed.

****The QUERY option** allows for a user to generate a printout by a specific session or date of one or more sessions.

Data Entry Screens

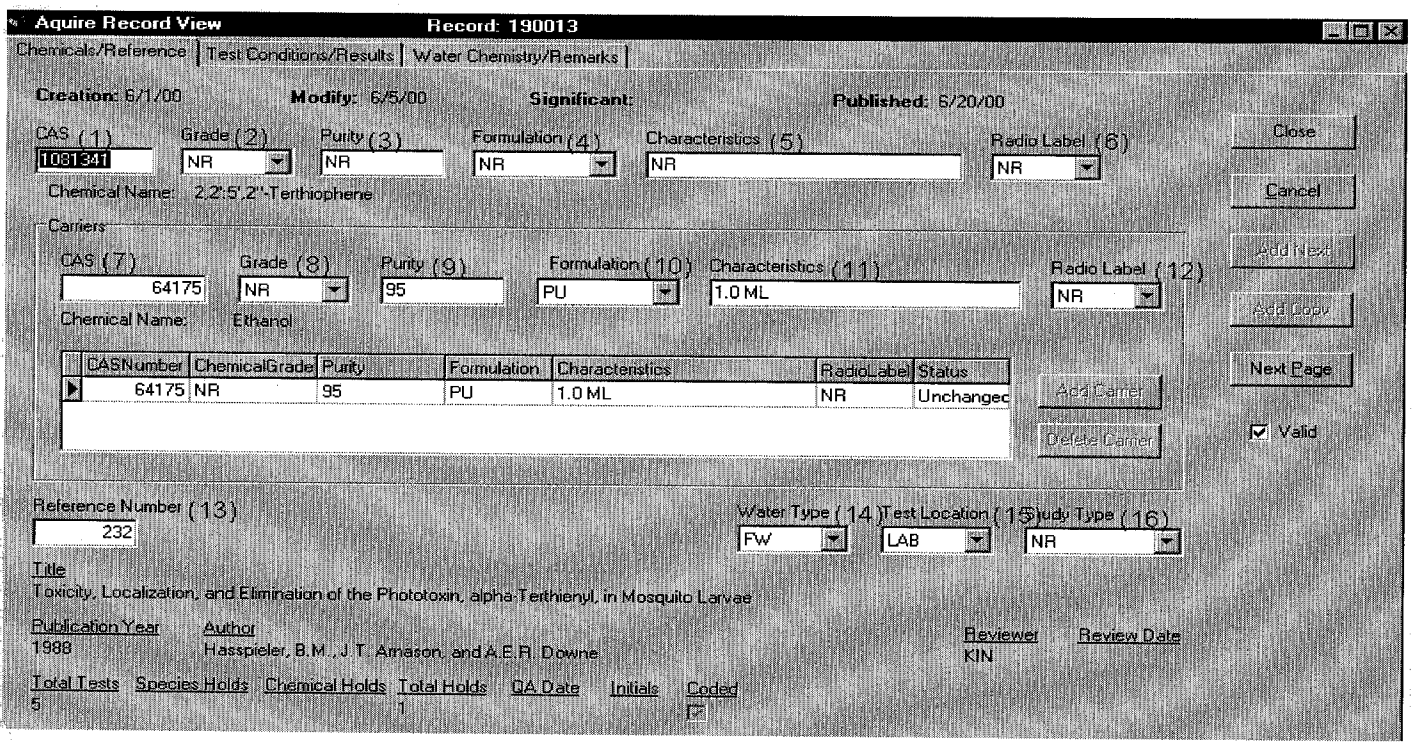
The data entry program is split into three screens for laboratory data and four screens for field data. Each entry screen houses information found on the coding sheets. The first screen contains chemical and reference information, some of which is entered by the data entry staff and other data which is previously entered by the reviewing staff (see Total Test and Holds for reviewing staff entry). The second screen contains test conditions and results. The third screen holds water characteristics and remarks. The fourth screen, which is used only for field studies, holds data specific to field conditions.

Figures 2 through 5 show actual AQMOD data entry examples. The numbers listed on the following pages correspond to the numbers placed near the data entry fields in Figures 2-5.

The following sections describe the data entry in the standard sequence for Screen One (field numbers 1 - 16), Screen Two (field numbers 17 - 37), Screen Three (field numbers 38 - 49), and Screen Four (field numbers 50 - 67) for field data. **Before you begin entry, turn CAPS LOCK ON.**

Screen One: Chemical/References

Figure 2. AQMOD: Screen One (Chemicals /Reference)

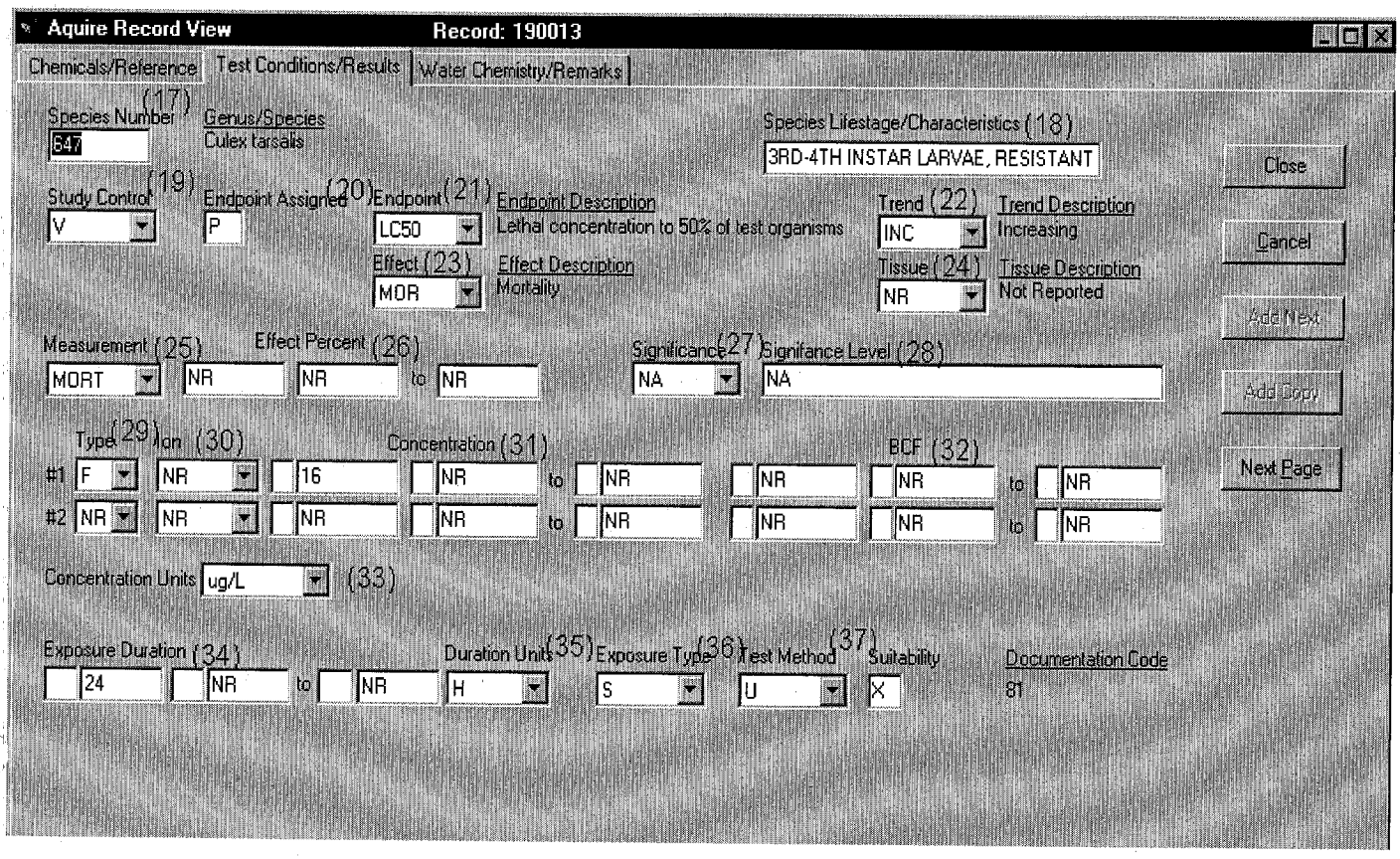


(1) Enter the CAS NUMBER (Chemical Abstract Number).
(2) Enter the GRADE or NR, if none.
(3) Enter the PURITY or NR, if none.
(4) Enter the FORMULATION or NR, if none.
(5) Enter the CHEMICAL CHARACTERISTICS or NR, if none.
(6) Enter the RADIOLABEL or NR, if none.
(7) Enter the CAS # for the carrier and press the "Add Carrier" button if there is more than one.
(8)-(12) Enter the same information as in directions 2 through 6.
(13) Enter the REFERENCE NUMBER to display the author and year of the data reviewed.
(14) Enter the WATER TYPE.
(15) Enter the TEST LOCATION.
(16) Enter the STUDY TYPE.

The data located on the bottom of the screen (Title, Publication Year, Author) is automatically populated when the reference number is entered. This data is taken from the ECOREF file (See Literature Acquisition for more information). The remaining data (Reviewer, Review Date, Total Tests, Species Holds, Chemical Holds, Total Holds, QA Date, Initials and Coded) is data that has been previously entered by the reviewing staff (See Total Test and Holds for more information). The Valid check box to the right of the screen is used at the time of update to mark valid entries to be released on the web site (See Update procedures for more information).

Screen Two: Test Conditions/Results

Figure 3. AQMOD: Screen Two (Test Conditions /Results)



(17) Enter the SPECIES NUMBER to display the species name pertaining to the data reviewed.

(18) Enter the LIFESTAGE /CHARACTERISTICS data (this section is labeled "Org Char" on the coding sheet). If all of the LIFESTAGE data will not fit in the field, eliminate the spaces between the units of measure and/or end the entry with a single slash and continue in the REMARKS section.

(19) Enter the STUDY CONTROL data if given or NR, if none.

(20) Enter the ENDPOINT ASSIGNED or leave empty.

(21) Enter the ENDPOINT code or NR, if none.

(22) Enter the TREND or NR, if none.

(23) Enter the EFFECT code.

(24) Enter the TISSUE code (will be changing to RESP SITE) or NR, if none.

(25) Enter the MEASUREMENT code.

(26) Enter the EFFECT PERCENT data (Mean, Min and Max), if applicable or NR.

(27) Enter the SIGNIFICANCE data or NR, if applicable.

(28) Enter the SIGNIFICANCE LEVEL data or NR, if applicable.

(29) Enter the TYPE.

(30) Enter the ION or NR, if none.

(31) Enter the CONCENTRATION (Mean, Min and Max), if applicable or enter NR. The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.

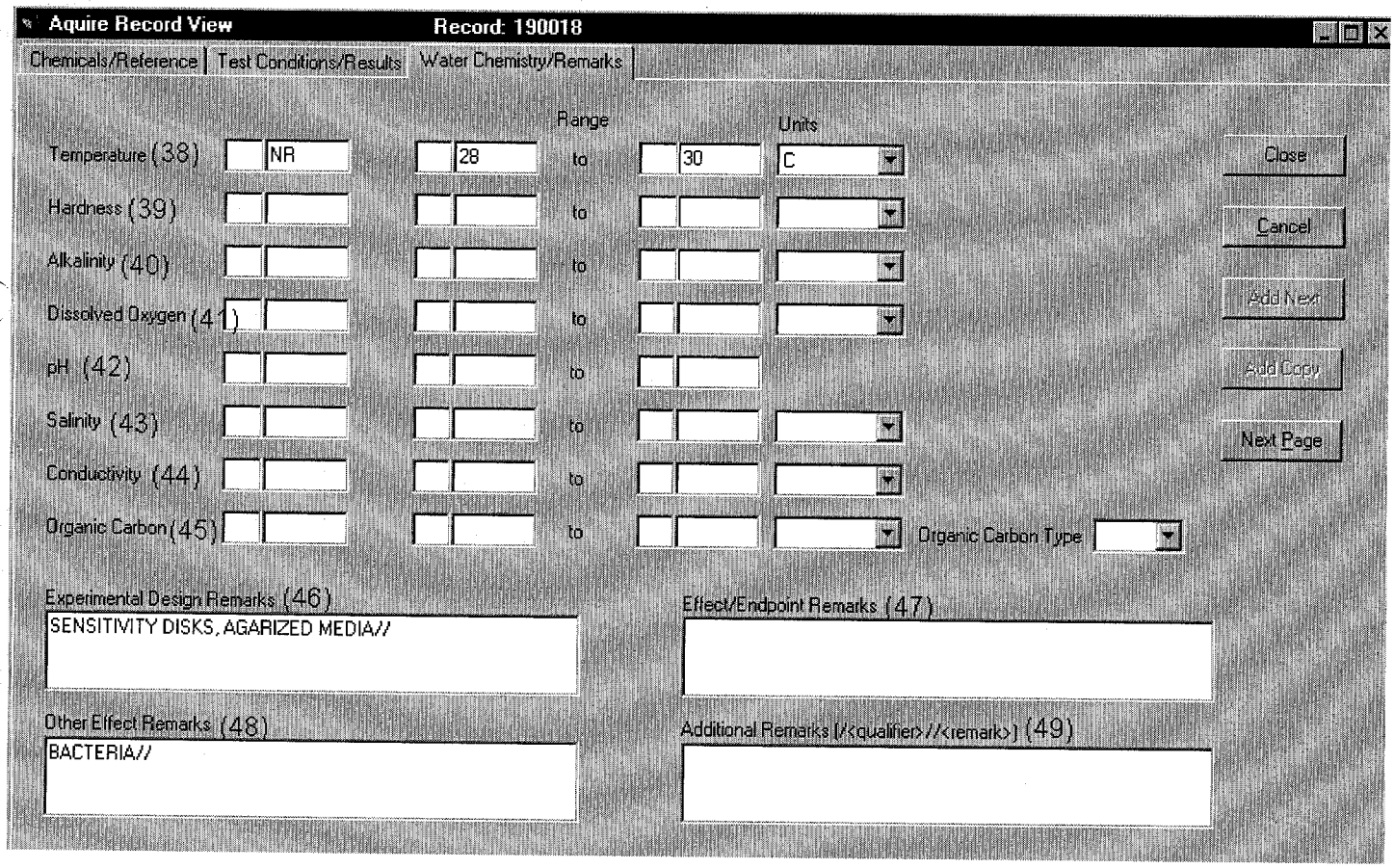
(32) Enter the BCF Value (Mean, Min and Max), if applicable or enter NR. The qualifiers (<, >, ~,=) are entered into the field previous to the value.

(33) Enter the CONCENTRATION UNIT of Measure.
(34) Enter the EXPOSURE DURATION (Mean, Min and Max), if applicable or enter NR.
The qualifiers (<, >, ~,=) are entered into the field previous to the value.
(35) Enter the DURATION UNITS of Measure (Mean, Min and Max).
(36) Enter the EXPOSURE TYPE or NR, if none.
(37) Enter the TEST METHOD or NR, if none.

The Suitability field is currently not used but will be used in the future for the EVISTRA project. The Documentation Code is electronically generated at the time of update by the programming staff (see http:/ontario.ecodev.com/ecotox/rel2/ ecotox_data_process.htm for more information)

Screen Three: Water Chemistry/Remarks

Figure 4. AQMOD: Screen Three (Water Chemistry /Remarks)

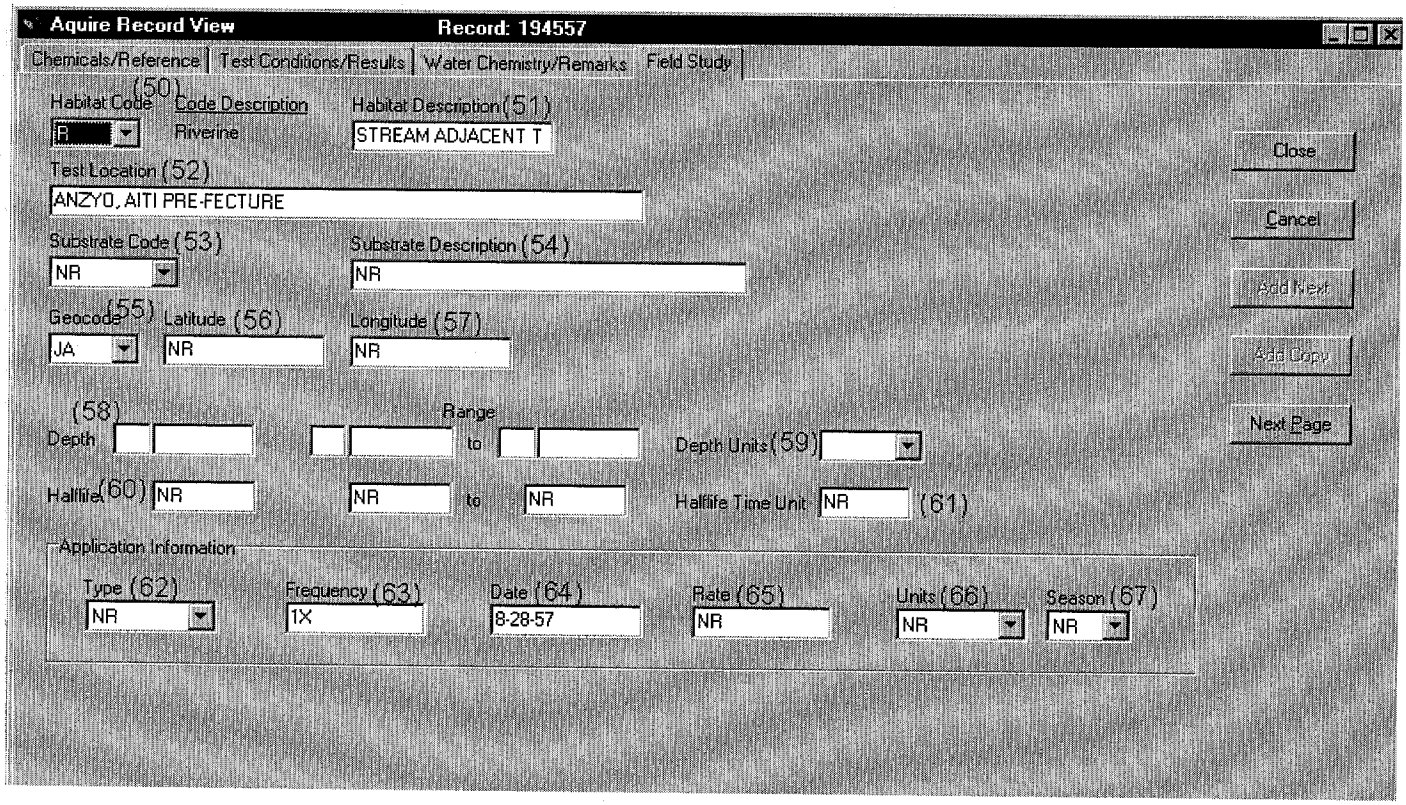


For Fields 38 - 45 listed below, enter the mean, min and max values or NR if not reported, in the fields provided. The qualifiers (<, >, ~,=) are entered into the field previous to the value. If the unit on the coding sheet differs from the default unit (which is present in the field when entering a new record), enter the UNIT of measure. If there is a value listed on the coding sheet but there is no UNIT written in the field, use the default unit. The default unit is listed in parenthesis after the field name below.

(38) Enter the TEMPERATURE (C)
(39) Enter the HARDNESS (mg/L CaCO3)
(40) Enter the ALKALINITY (mg/L CaCO3)
(41) Enter the D.O. (mg/L)
(42) Enter the pH
(43) Enter the SALINITY (ppt)
(44) Enter the CONDUCTIVITY (umhos/cm)
(45) Enter the ORGANIC CARBON (mg/L). Also enter the one letter code (D, T, or P) in the ORGANIC CARBON TYPE field.
(46) Enter EXPERIMENTAL DESIGN Remarks text (follow all remarks with a double-slash).
(47) Enter EFFECT/ENDPOINT Remarks text (follow all remarks with a double-slash).
(48) Enter OTHER EFFECT Remarks text (follow all remarks with a double-slash).
(49) Enter ADDITIONAL Remarks text (Conc, Efct, Tissue, etc. - ex. CONC/ONLY CONC TESTED//TEMP/FROM GRAPH//) (follow all remarks with a double-slash))

Screen Four: Field Study

Figure 5. AQMOD: Screen Four (Field Study)



This screen appears **only** when "FIELD" is entered in the LOCATION field of the coding sheet.

(50) Enter the HABITAT Code or NR, if none.
(51) Enter the HABITAT DESCRIPTION or NR, if none.
(52) Enter the TEST LOCATION or NR, if none.
(53) Enter the SUBSTRATE CODE (a two-letter code) or NR, if none.

(54) Enter the SUBSTRATE DESCRIPTION or NR, if none.
(55) Enter the GEOCODE or NR, if none.
(56) Enter the LATITUDE (N,S) or NR, if none. Enter the numbers and symbols according to the following example (e.g. Latitude 45~15'10"N), using the tilde "~" sign for DEGREES. There are no spaces between the entries.
(57) Enter the LONGITUDE (E,W) or NR, if none. Enter the numbers and symbols according to the following example (e.g.Longitude 40~8'15"W), using the tilde "~" sign for DEGREES. There are no spaces between the entries.
(58) Enter the DEPTH, (mean, min and max) , if applicable, or NR.
The qualifiers (<, >, ~,=) are entered into the field previous to the value.
(59) Enter the DEPTH Units.
(60) Enter the HALFLIFE (mean, min and max), if applicable, or NR.
(61) Enter the HALFLIFE TIME Unit or NR, if none.
(62) Enter the (Application) TYPE or NR, if none.
(63) Enter the FREQUENCY or NR, if none
(64) Enter the DATE, in the format of MO-DA-YR, or NR, if none.
(65) Enter the RATE or NR, if none.
(66) Enter the Rate Unit of Measurement or NR, if none.
(67) Enter the SEASON abbreviation (i.e., WI=Winter, SU=Summer, AU=Fall, SP=Spring) or enter NR, if none.

Reports

Upon completing a batch of data entry, select "File" and "Exit." The system will ask if the user wants to print the session. Select "YES" to print immediately or "no" if the session is to be printed at a later time. All data entered must be printed out and quality assured by two staff members (see Quality assurance). The system will automatically exit upon the completion of the printout. Make sure to note the session number prior to exiting the system as it may be useful when referring to a specific batch of data entry.

At any time, one or more specific records from the main grid (see Figure 1) may be selected for printing when holding down the control key. After selecting the records needed, click on the "Print" button for a printout.

Queries

The QUERY option (in the main data screen) provides statistics by SESSION number or by the DATE of entry /modification to either view or print. The options QUERY, RESET QUERY and SHOW HOLDS COUNTS have not been implemented for use, but will be in FY01.

Quality Assurance

After the data entry is completed from the coding sheet, all data entries are printed and independently quality assured by two AQUIRE staff members (one data entry staff and one reviewer). Modifications are made by the data entry staff and these corrections are quality assured from the printout by two staff members until all data are accurate. When proofing use an ink pen, write the date and your initials at the top of the report, and place a check mark next to the location number printed on the report after the

record has been quality assured. Cross out erroneous data and write the correct information next to it. If there is uncertainty about an entry found by data entry staff, write a note or place a question mark next to the record which will bring it to the attention of a reviewer. It is the responsibility of the reviewer performing the quality assurance to investigate the questions from the data entry staff.

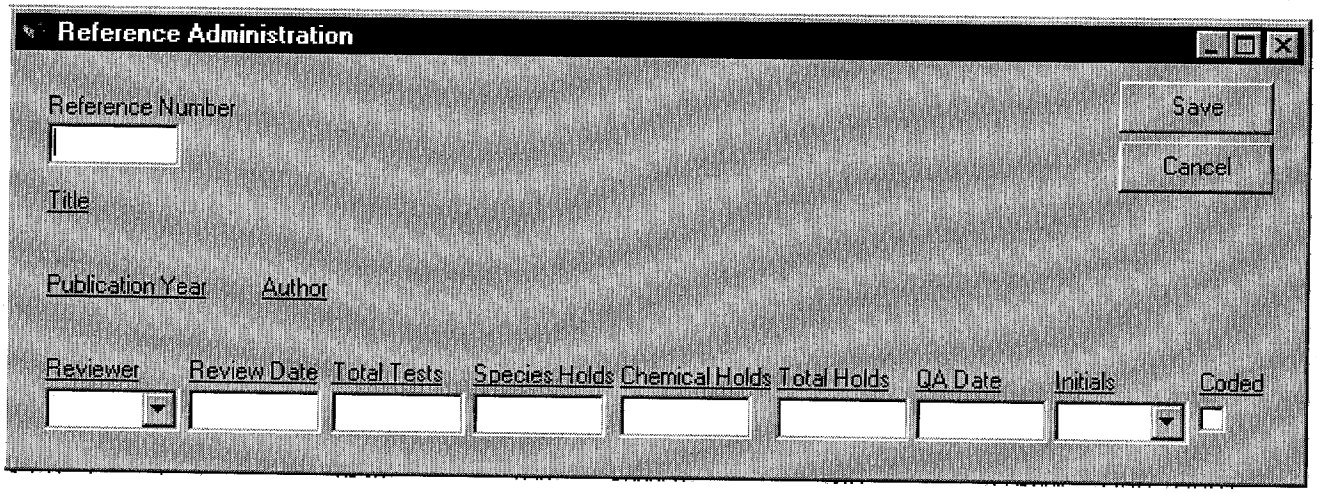
Total Test and Holds

Total test and holds information is entered previous to data entry by the reviewing staff. A limited number of staff members have access to this application to ensure data integrity. Therefore, the data entry application is found in the AQMOD Administration section to which a special password is needed.

Information for a specific reference number is shown on each record that was entered for that paper. The following data is entered from the coding sheet: Reference Number, Reviewer, Review Date, Total Tests, Species Holds, Chemical Holds, Total Holds, QA Date, Initials and Coded. Figure 6 shows the fields that are data entered from the coding sheets.

Figure 6. AQMOD: Total Tests and Holds

The entry into the Administrative section from the Main screen of AQMOD (see Figure1)



is as follows:

choose FILE
Login
Click the Administration Field
Enter User name
Enter Password

This will give access to the Administration button on the main screen. To proceed:

choose ADMIN
Reference administrator

This will bring up the screen shown in Figure 6.
All fields must be entered for each reference prior to data entry.

BackUps

The data entry system is backed up daily by the programming staff. Programming documentation on the backup procedures can be found at: http://ontario.ecodev.com/programmer_info/backup_procedures.htm .

Updates

Data in AQMOD are available to the ECOTOX software after an update of newly entered data occurs. The update process combines the data entry modifications with existing data files to create new public files used by the ECOTOX web site. For complete information on the update process performed by programming staff see: http:/ontario.ecodev.com/ecotox/rel2/ecotox_data_process.htm

Updates are performed quarterly. However, additional updates may occur at the request of either programming or technical staff as program development tasks or increased data entry activity justifies. The updates are coordinated between programmer and data coordinator to ensure a smooth work flow.

New data entry stops four business days before an update to allow for the completion of quality assurance. The verification that the data are ready to be updated (i.e., that all data are accurate) is performed by the data entry staff and lead reviewer. All data is valid at this point and the valid check box is electronically marked for all new entries by the programming staff.

The programmer performs the update in a procedure detailed in the Programmer SOPs. The actual update involves three major steps:

- Generate support files
- Update new support and data files
- Reset modification files (AQMOD)

Support file generation involves processing the new modification data and existing data files into new index files. These files are used to support AQUIRE searching functions (i.e., the software searches the data in a shorter time using index files rather than the raw data file). The support file generation will detect technical or program errors. When errors are detected the support file generation will not occur until the problem is resolved. This may mean making additional AQMOD modifications and reverification. If the support file generation is successful, the new support and raw data files replace the existing data files in the AQUIRE software.

Upon the completion of a successful update, the programming staff updates that web site www.epa.gov/ecotox with the latest statistics. For more information refer to the OUTREACH Standard Operating Procedures "What's New".

Data Archival

Completed coding sheets are sent to EPA for archival after an update is completed. They are filed by CAS#, then by reference number. Double reviews (See ECOTOX Reviewing for more information are maintained in a separate file and organized by reference number. Unverified chemical coding sheets are filed with the chemical

support staff; unverified species are filed with species support staff (see ECOTOX Chemical and ECOTOX Species Verification Standard Operation Procedures for more information). Data set records incorporated electronically are quality assured by programming and reviewing staff then original records are archived (See ECOTOX Overview for more information).

APPENDIX A
AQMOD Data Fields, Type and Remark Abbreviations

(Field numbers refers to Figures 2, 3, 4 and 5)

1ST SCREEN			
Field #	**Field Type**	**Field Heading**	**Remark Abbreviation**
1	Numeric	CAS Number	none
2	Valid Code	Grade	GRADE
3	Numeric	Purity	PURITY
4	Valid Code	Formulation	FO
5	Text	Characteristics	CHAR
6	Valid Code	Radiolabel	RADIO
7	Numeric	Carrier or Solvent	CARRIER (ONLY if Solvent has no CAS #)
8	Valid Code	Solvent Grade	SOLVGRADE
9	Numeric	Solvent Purity	SOLVEPURITY
10	Valid Code	Solvent Formulation	SOLVEFO
11	Text	Solvent Characteristics	SOLVCHAR
12	Valid Code	Solvent Radiolabel	SOLVRADIO
13	Numeric	Reference	None
14	Valid Code	Media (Water Type)	FW,SW
15	Valid Code	Location	LAB,FIELD
16	Valid Code	Study Type	STUDYTYPE

2ND SCREEN			
Field #		**Field Heading**	**Remark Abbreviation**
17	Numeric	Species Number	None
18	Text	Organism Char	LIFESTG
19	Valid Code	Control	CONTR
20	Valid Code	Endpoint Assigned	None
21	Valid Code	Endpoint	In EE Remark
22	Valid Code	Trend	TREND
23	Valid Code	Effect	In EE Remark
24	Valid Code	Tissue (Resp Site)	SITE
25	Valid Code	Measurement	In EE Remark
26	Numeric	Effect Percent	EFCT%
27	Valid Code	Signif	STATS
28	Text/ Numeric	Level	None
29	Valid Code	TYPE	None
30	Valid Code	Ion	ION
31	Numeric	Concentration	CONC
32	Numeric	BCF	BCF
33	Valid Code	Concentration Unit	None
34	Numeric	Exposure Duration	TIME
35	Valid Code	Exposure Units	None
36	Valid Code	Exposure Type	TYPE
37	Valid Code	Test Method	ANALYSIS

3RD SCREEN			
Field #	Field Type	**Field Heading**	**Remark Abbreviation**
38	Numeric	Temperature	TEMP
39	Numeric	Hardness	HARD
40	Numeric	Alkalinity	ALK
41	Numeric	Dissolved Oxygen	DO
42	Numeric	pH	PH
43	Numeric	Salinity	SALIN
44	Numeric	Conductivity	COND
45	Numeric	Organic Carbon	ORG C
46	Text	Experiment Design	None
47	Text	Endpoint/Effect Remark	None
48	Text	Other Effect Remarks	None
49	Text	Additional Remarks	None

4TH SCREEN			
Field #	Field Type	**Field Heading**	**Remark Abbreviation**
50	Valid Code	Habitat Code	None
51	Text	Habitat Descr	HAB DESCR
52	Text	Location	LOC
53	Valid Code	Substrate Code	None
54	Text	Substrate Info	SUBSTR
55	Valid Code	GEOCODE	None
56	Text/ numeric	Latitude	LAT
57	Text/ numeric	Longitude	LONG
58	Numeric	Water Depth	DEPTH
59	Valid Code	Depth Units	None
60	Numeric	Half Life	HALF
61	Valid Code	HalfLife Time Unit	None
62	Valid Code	AP Type	AP TY
63	Numeric/ Text	AP Frequency	AP FREQ
64	Numeric	AP Date	AP DATE
65	Numeric	AP Rate	AP RATE
66	Valid Code	Rate Unit Meas	NONE
67	Valid Code	AP Season	AP SEAS

ECOTOX

ECOTOXicology Database System

ECOTOX DATA ENTRY PROCEDURES (TERRETOX)

Prepared for

U.S. Environmental Protection Agency
Office of Research and Development
National Health and Environmental Effects Research Laboratory
Mid-Continent Ecology Division (MED)
Duluth, Minnesota

By

Computer Sciences Corporation
Duluth, Minnesota 55804
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ECOTOX DATA ENTRY PROCEDURES (TERRETOX)

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TERRETOX Data Entry Overview

The entry of TERRETOX data are facilitated by the TERRETOX data entry software. Data fields are designed to allow for user/reviewer readability while permitting the software to search and retrieve. Appendix A lists all of the TERRETOX data fields.

In addition to the fields listed in Appendix A, the reference, chemical and species files are independently maintained to support the TERRETOX software. All entries to these files are manually verified for accuracy. The files must undergo updating procedures before data are available for use by the TERRETOX software. There is a numerical link between the data file (reference number, CAS#, species number) and the TERRETOX software that allows the integration of additional data (e.g., author, chemical name, species Latin name).

For most of the fields, TERRETOX software verifies the entry against a data file of valid codes (see http://europa.ecodev.com/terretox/terretox_data_entry_functional.htm for more information). These files are compiled and maintained independently of TERRETOX software. The files may be edited using valid codes database tables by ECOTOX staff.

New codes are verified as valid by the EPA Database Coordinator. Once edited, all valid codes are immediately available for use in the TERRETOX software.

Computerized quality assurance checks are performed on fields that contain numbers to assure that the mean values fall within the range. The data entry software will not allow entry of any record that does not meet the five minimal criteria for inclusion (see ECOTOX Review of Literature for a discussion of these criteria).

Text fields are not subject to software validation, but verified by a reviewer. Text fields hold supplementary information and are not ECOTOX searchable fields, although some may be retrieved as output fields.

Data Entry Format Rules

A **GREEN** pen **must** be used to record the TERRETOX location number (LOC #), on the coding sheet. The LOC# is generated by the program, and appears at the top of the data entry screen. The location number is recorded on the TERRETOX coding sheet to the left of the data record, in the LOC # field.

Periods are not entered into any TERRETOX data field, except when entering a decimal point for numerical data. Commas may be entered to separate entries within a text data field. When entering **numbers with units**, use the format of the following examples: 65(60-70) G or 65 G. When entering **statistics data**, there are no spaces (e.g., p<0.05-0.001).

The following are hyphenated in the REMARKS section:

- •Half-life
- •Foot-candles
- •Post-treatment...or abbreviated as post-trtmt
- •Post-exposure, pre-exposure

Also in the REMARKS section:

- •Pretreatment is one word...or abbreviated as prtrtmt
- •*In vitro* is two words
- •Tap water and sea water, are two words. Saltwater and freshwater are one word.
- •Sul**ph**ate and sul**ph**ite are to be spelled as sul**f**ate or sul**f**ite.

All entries are capitalized, with the exception of four fields. The RADIOLABEL field, ION field and the UNIT OF MEASURE fields all have pop down boxes to choose the correct code. The Organism Characteristics data field is NOT capitalized. The abbreviations for cultivar (cv.) or variety (var.) are entered in lower case. The cultivar or variety names are entered in title case.

Within text fields, chemical formats such as $CuSO_4 \bullet 5H_2O$, are entered as "CUSO4.5H2O." The format for a temperature of 24°C is entered as "24 C."

If the entry into a text field does not fit, a forward slash (/) is added to the end of that field and the entry is continued in the ADDITIONAL REMARK section followed by a double-slash (e.g. LIFESTG/12 MM//).

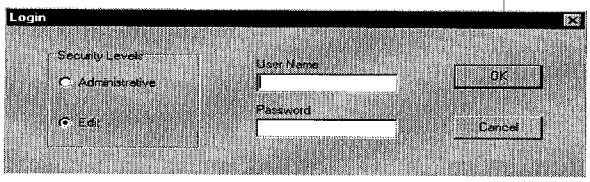
All REMARKS should have an abbreviated remark header for each field (See Abbreviations, Appendix A) followed by a single slash (/) and terminated with a double slash (//).

All REMARKS should run together (e.g. CONC/ONLY CONC TESTED//HARD/FROM GRAPH//SITE/GI, BL, LI, IN, SH//)

Data Entry Access and Menus

To access the TERRETOX Database, select the TERRETOX icon which is placed on the computer by programming staff.

To start data entry, select one of the following options: "View," "Edit," "Insert," "Un/Delete," or "Print" (screen shown in Figure1). A LOGIN window will appear. Enter the users name and password (provided by the programmers).



Note: After logging in, a "Session number" will appear in the bottom left-hand corner of the main data entry screen. Record this number in a journal or post-it note nearby. This number is used to print or retrieve session reports only in case of electrical/computer interruption. To print a session select 'Print Session Report" from the file menu, enter

the session number in the "Enter Session ID" field and click 'OK'. To retrieve a session report select "View Entry Statistics by Session" from the Query menu enter the session number in the "Enter Session ID" field and click 'OK'.

Select the "VIEW" button to review a selected record. Choose Reference, Test, Exposure or Result in the "Find:" data box and enter the Reference, Test, Exposure or Result number that needs to be reviewed into the "*Find TERRETOX Record*" field. Then click the "Go" button to retrieve the information.

Select the "EDIT" button to modify data in a previously entered record. Choose Reference, Test, Exposure or Result in the "Find:" data box and enter the Reference, Test, Exposure or Result number that needs modification into the "*Find TERRETOX Record*" field. Then click the "Go" button to retrieve the record.

Select the "INSERT" button to add a record and obtain a LOCATION number, generated automatically by the software, for the new data.

Select the "UN/DELETE" button to DELETE or RESTORE a record. This feature allows the user to restore a record without having to re-enter the data. Choose Reference, Test, Exposure or Result in the "Find:" data box and enter the Reference, Test, Exposure or Result number that needs deletion or restoration into the "*Find TERRETOX Record*" field. Then click the "Go" button to retrieve the record.

Select the "PRINT" button to print one or more record numbers. This feature is useful to create reports for specific records needed.

****The QUERY option**, located in the menu area, allows for a user to generate a printout by a specific session or date of one or more sessions.

Data Entry Screens

The data entry program is split into three screens. Each entry screen houses information found on the TERRETOX coding sheets. The first screen contains the Test Information. The second screen contains Exposure Information and the third screen holds the Results Information.

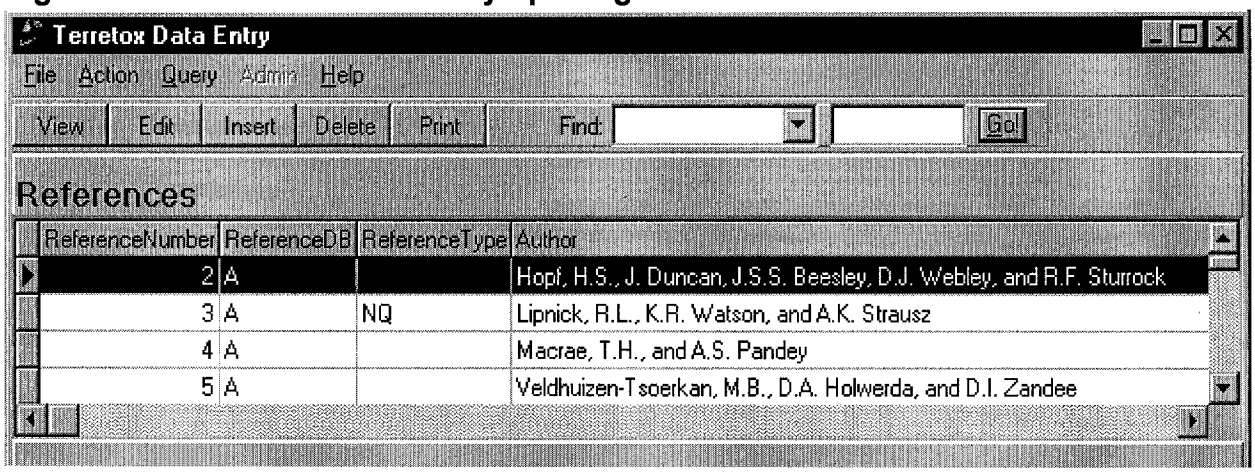
Figures 2 through 4 show actual TERRETOX data entry examples. The numbers listed on the following pages correspond to the numbers placed in or near the data entry fields in Figures 2-4.

The following sections describe data entry in the standard sequence for Screen One (field numbers 1 - 62), Screen Two (field numbers 63 - 80), and Screen Three (field numbers 81 - 109). **Before you begin entry, turn CAPS LOCK ON.**

Inserting New Data

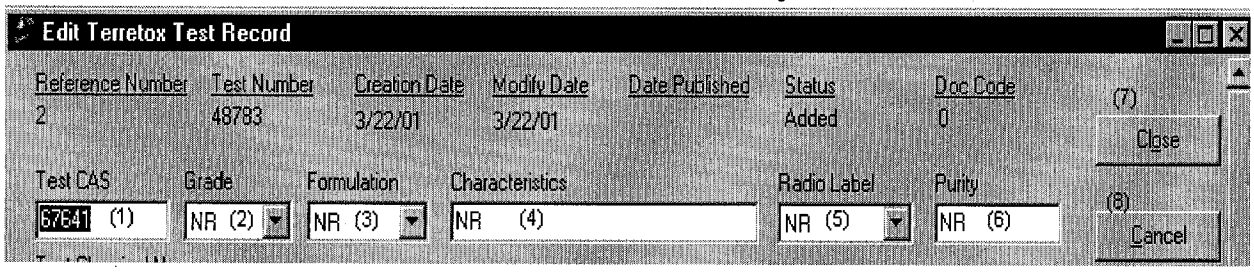
To Insert new data:
Select "Reference" in the "FIND" Box, and then type Reference number of the paper that is to be data entered into the box next to Find.
Then Click "GO" or press enter.
Double click the Reference to review reference information and ensure that all information is correct (e.g. Title, Authors, Total tests, reviewers, etc.).
To enter tests in the TEST portion of the data entry system, click the "INSERT" Button.

Figure 1. TERRETOX Data Entry opening screen.



Next, using a green pen, write the Test Number (which is automatically generated by the database) on the coding sheet above the species name.
NOTE: The default entry for most data fields is 'NR' and is already entered into the data fields. The only fields that may remain blank are the 'Remarks', 'Operator' or 'Rating' data fields.

Figure 2.1. TERRETOX TEST Information data entry screen.



The following data entry fields are noted in Figure 2.1.
(1) Enter the CAS NUMBER (Chemical Abstract Number)

(2) Enter the GRADE
(3) Enter the FORMULATION
(4) Enter the CHEMICAL CHARACTERISTICS .
(5) Enter the RADIOLABEL .
(6) Enter the PURITY.
(7) Select the "Close" button to save the data entered (upon complete entry of data entry page)
(8) Select the "Cancel" button to exit without saving the data entered on the data entry page
If there is a carrier or positive control to be added, click the 'Carriers' button (#31, Fig. 2.2) to start the control data entry screen (Fig. 2.3). In the Purpose data box, click the

Figure 2.2. TERRETOX TEST Information data entry screen (continued).

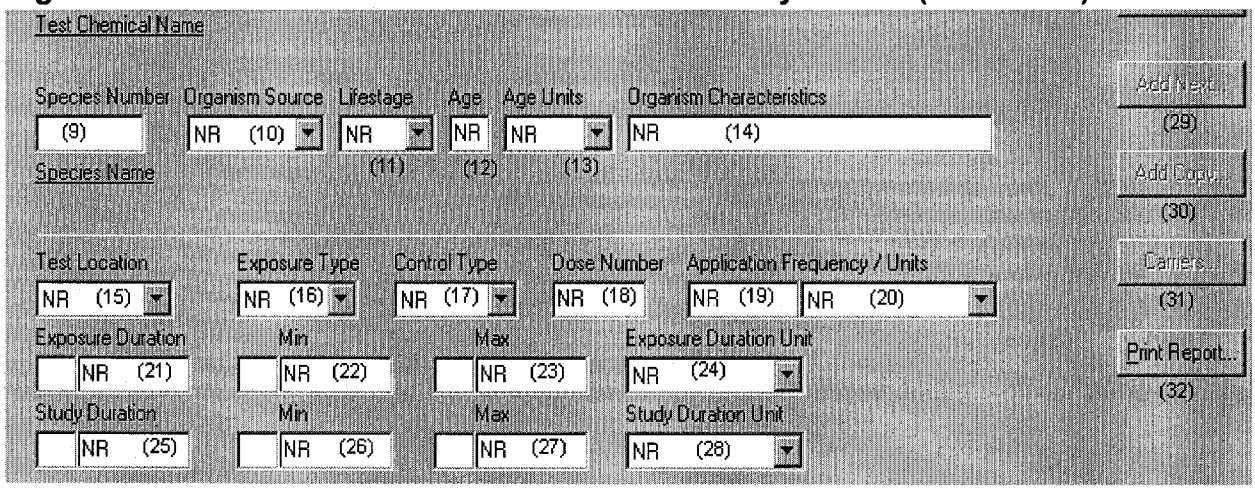
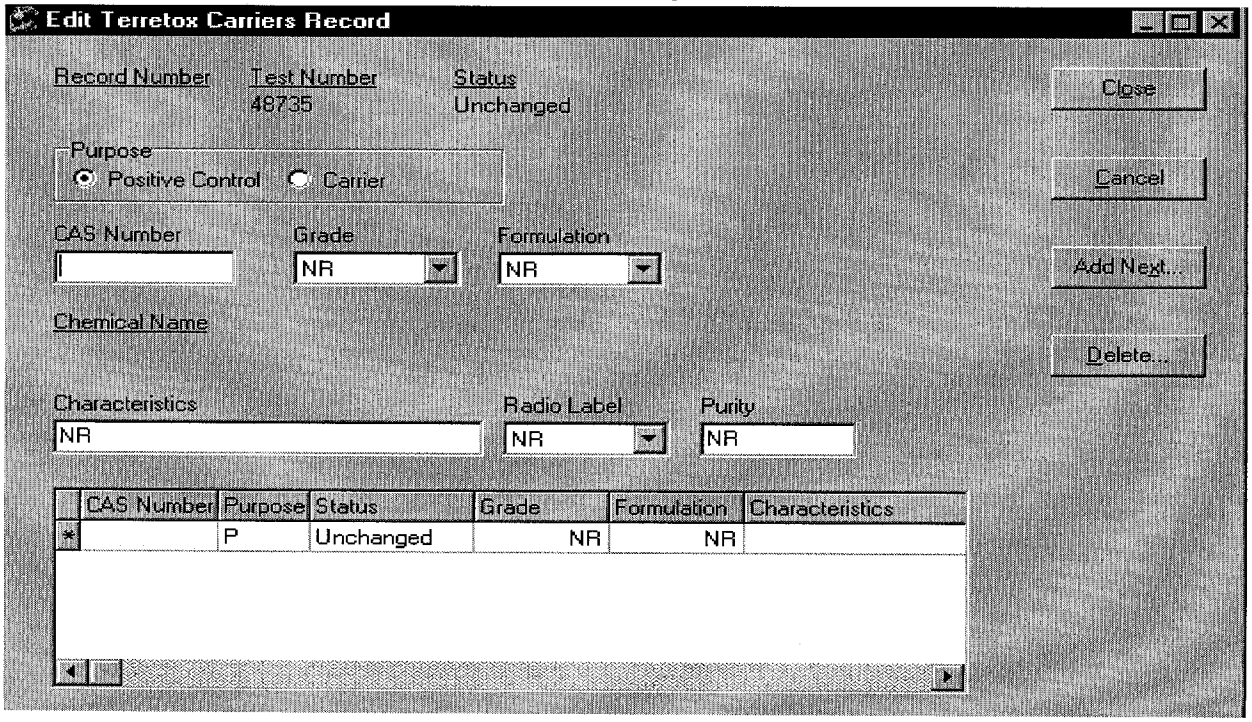


Figure 2.3 Carrier/Positive Control data entry screen.



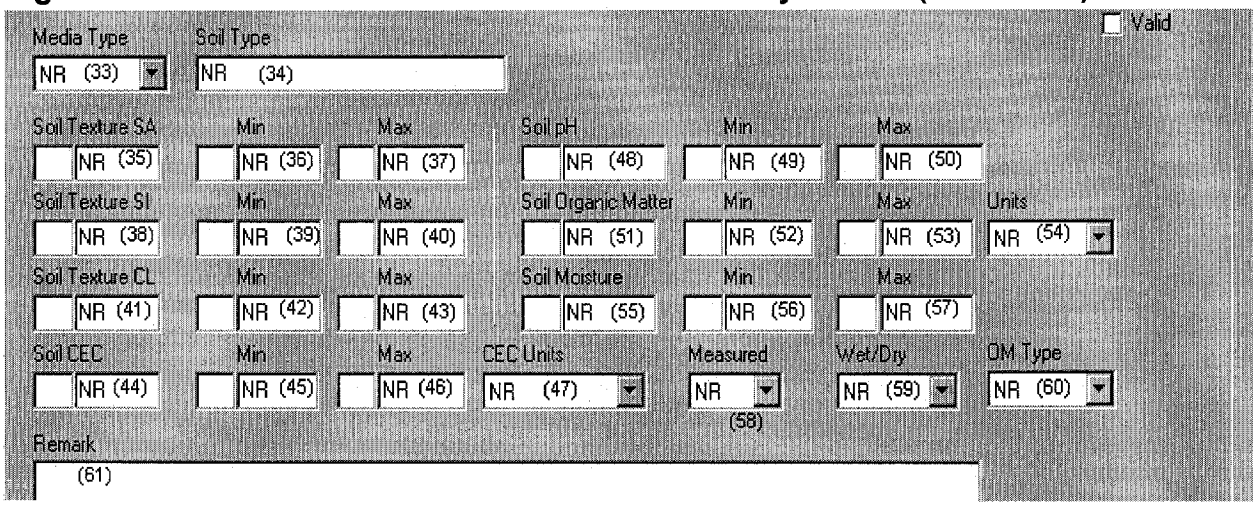
box for carrier or positive control as noted on the data entry coding sheet. The other carrier and positive control data fields are entered like the test chemical data fields. If additional carrier and/or positive control information is present, click the "Add Next" button until all of the carriers and/or positive controls have been entered. When the entry of carriers and/or positive controls are entered, click the "Commit" button (the "Close" button changed to "Commit" upon the entry of a valid CAS number) to return to the Test Information screen. Click the "Cancel" button to abort the entries made or "Delete" to delete the previous carrier or positive control entry. If the carrier screen was entered inadvertently, click the "Close" button.

The following data entry fields are noted in Figure 2.2. (See previous page)

(9) Enter the SPECIES NUMBER to display the species name pertaining to the data reviewed.
(10) Enter the ORGANISM SOURCE
(11) Enter the LIFESTAGE data. If all of the LIFESTAGE data will not fit in the field, eliminate the spaces between the units of measure and/or end the entry with a single slash and continue in the REMARKS section.
(12) Enter the AGE
(13) Enter the AGE UNITS
(14) Enter the ORGANISM CHARACTERISTICS - If entering cultivar or variety information, be sure to use lower and title case as previously described.
(15) Enter the TEST LOCATION
(16) Enter the EXPOSURE TYPE
(17) Enter the CONTROL TYPE
(18) Enter the DOSE NUMBER
(19) Enter the APPLICATION FREQUENCY
(20) Enter the application frequency / UNITS
(21) Enter the EXPOSURE DURATION: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(22) Enter the exposure duration MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(23) Enter the exposure duration MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(24) Enter the EXPOSURE DURATION UNIT
(25) Enter the STUDY DURATION: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(26) Enter the study duration MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(27) Enter the study duration MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(28) Enter the STUDY DURATION UNIT
(29) Select the "Add Next..." button to add another entry.
(30) Select the "Add Copy..." button to add another entry with a lot of the same data.
(31) Select the "Carriers..." button to add carriers, if available.
(32) Select the "Print Report..." button to print a report for quality assurance purposes.

The following data entry fields are noted in Figure 2.4.

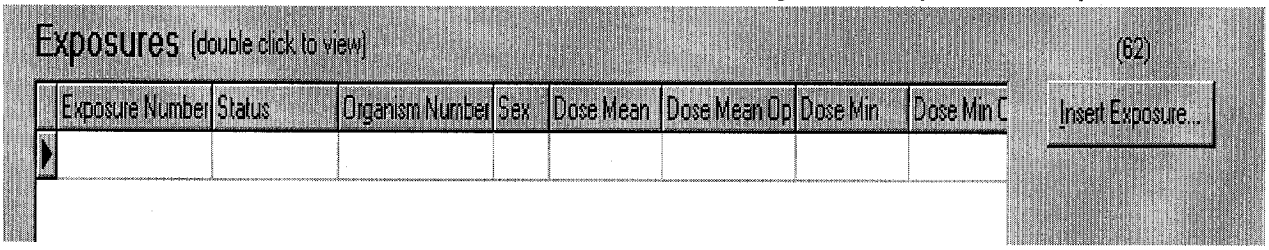
Figure 2.4. TERRETOX TEST Information data entry screen (continued).



(33) Enter the MEDIA TYPE
(34) Enter the SOIL TYPE
(35) Enter the SOIL TEXTURE SA ('SA' represents sand): The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(36) Enter the soil texture sa MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(37) Enter the soil texture sa MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(38) Enter the SOIL TEXTURE SI ('SI' represents silt): The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(39) Enter the soil texture si MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(40) Enter the soil texture si MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(41) Enter the SOIL TEXTURE CL ('CL' represents clay): The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(42) Enter the soil texture cl MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(43) Enter the soil texture cl MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(44) Enter the CEC: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(45) Enter the cec MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(46) Enter the cec MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(47) Enter the cec UNITS
(48) Enter the Soil pH: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(49) Enter the pH MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(50) Enter the pH MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(51) Enter the SOIL ORGANIC MATTER: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.

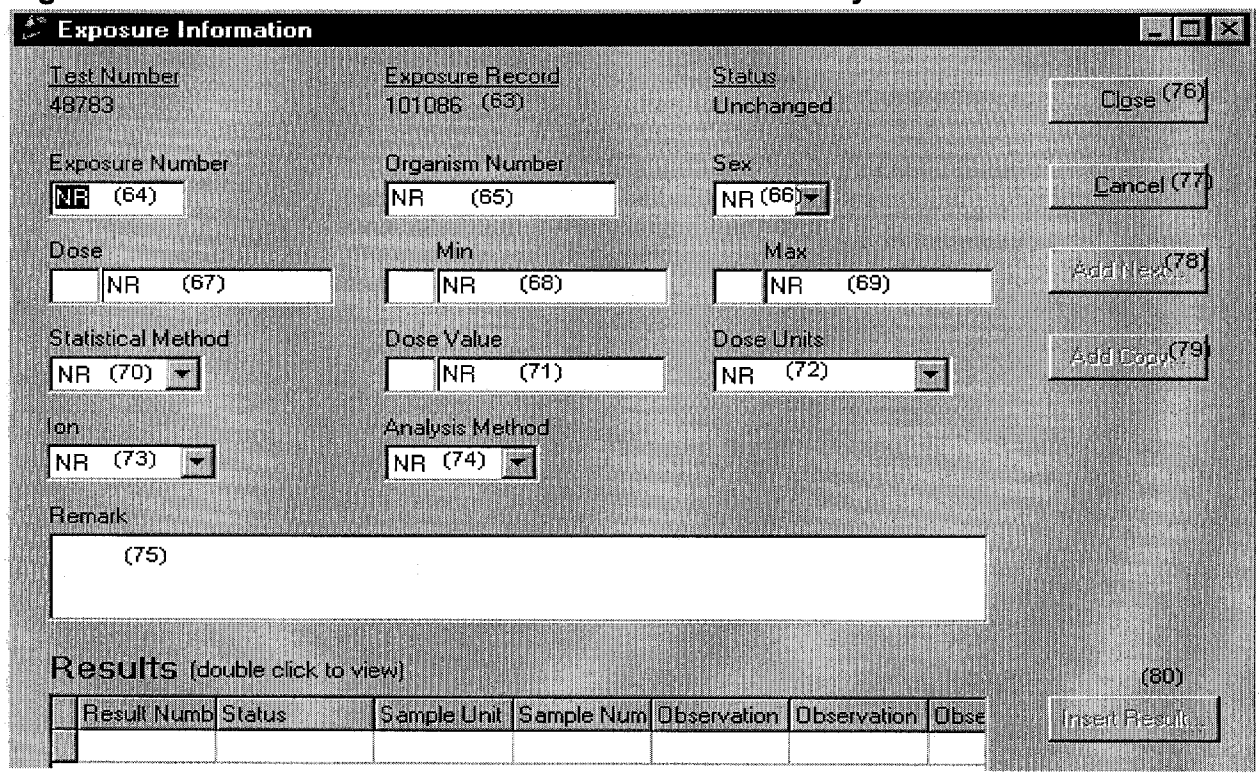
(52) Enter the soil organic matter MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(53) Enter the soil organic matter MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(54) Enter the soil organic matter UNITS
(55) Enter the SOIL MOISTURE: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(56) Enter the soil moisture MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(57) Enter the soil moisture MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(58) Enter the MEASUREMENT CODE MEASURED
(59) Enter the WET/DRY or NR, if none
(60) Enter OM TYPE or NR, if none
(61) Enter REMARKS or leave blank, if none

Figure 2.5. TERRETOX TEST Information data entry screen (continued).



To get to the EXPOSURE Information screen,
(62) Click INSERT EXPOSURE button to get to the EXPOSURE SCREEN (see Figure 2.5)
(63) Using a green pen, write the EXPOSURE Record NUMBER, generated by the data entry software, on your coding sheet next to the Dose ID number you are entering - See Figure 3.

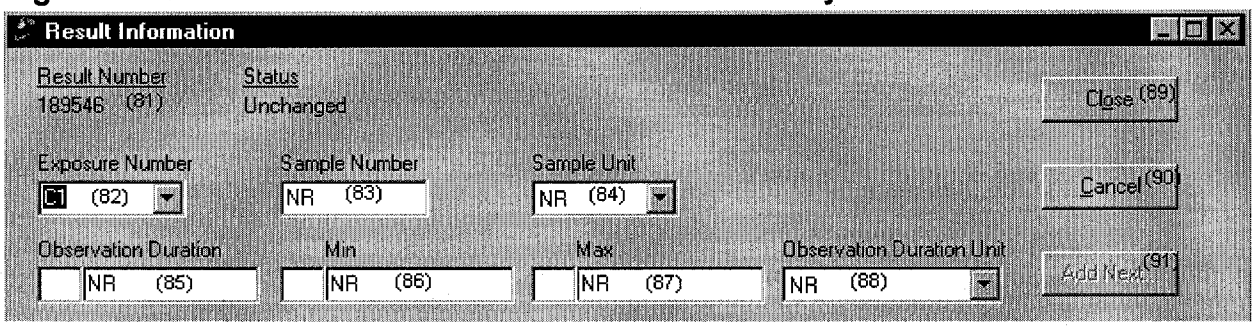
Figure 3. TERRETOX EXPOSURE Information data entry screen.



The following data entry fields are noted in Figure 3.

(64) Next enter the EXPOSURE NUMBER, represented on the coding sheet by Dose ID and Dose No., into the Exposure Number field.
(65) Enter the ORGANISM NUMBER, or NR
(66) Enter the SEX or NR, if none
(67) Enter the DOSE: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value.
(68) Enter the dose MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(69) Enter the dose MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(70) Enter the STATISTICAL METHOD
(71) Enter the DOSE VALUE: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(72) Enter the DOSE UNITS
(73) Enter the ION
(74) Enter the ANALYSIS METHOD
(75) Enter the REMARKS, if applicable
(76) Select the "Close" button to save and exit the data entry screen.
(77) Select the "Cancel" button to not save the data and exit the data entry screen.
(78) Select the "Add Next..." button to add a new exposure record.
(79) Select the "Add Copy..." button to add a new exposure record with similar data.
(80) Select the "Insert Result..." button to enter data into the Result Information data entry screen.

Figure 4.1. TERRETOX RESULT Information data entry screen.

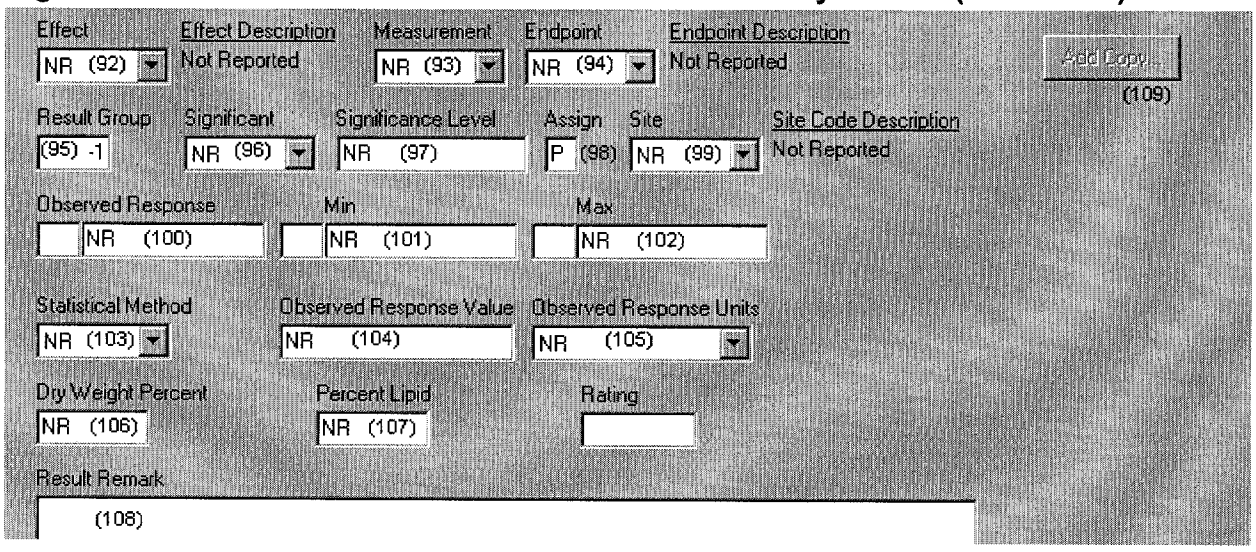


(81) Using a green pen, write the RESULT NUMBER on your coding sheet. This number is generated by data entry software as one enters the Result Information screen.

The following data entry fields are noted in Figure 4.1

(82) Next enter the EXPOSURE NUMBER
(83) Enter the SAMPLE NUMBER, if applicable
(84) Enter the SAMPLE UNIT, if applicable
(85) Enter the OBSERVATION DURATION: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(86) Enter the observation duration MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(87) Enter the observation duration MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(88) Enter the OBSERVATION DURATION UNIT
(89) Select the "Close" button to save data and exit the data entry screen.
(90) Select the "Cancel" button to not save data and exit the data entry screen.
(91) Select the "Add Next..." button to add additional data to the data entry screen.

Figure 4.2. TERRETOX RESULT Information data entry screen (continued).



The following data entry fields are noted in Figure 4.2

(92) Enter the EFFECT
(93) Enter the MEASUREMENT
(94) Enter the ENDPOINT
(95) Enter the RESULT GROUP or leave the default '-1' in the data field if coding sheet offers no data for this.
(96) Enter the SIGNIFICANT
(97) Enter the SIGNIFICANCE LEVEL
(98) Enter the ASSIGN or leave the default 'P' in the data field.
(99) Enter the SITE
(100) Enter the OBSERVED RESPONSE: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(101) Enter the OBSERVED RESPONSE MIN: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(102) Enter the OBSERVED RESPONSE MAX: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(103) Enter the STATISTICAL METHOD
(104) Enter the OBSERVED RESPONSE VALUE: The qualifiers (<, >, ~,=) are entered into the field previous to the concentration value
(105) Enter the OBSERVED RESPONSE UNITS
(106) Enter the DRY WEIGHT PERCENT
(107) Enter the PERCENT LIPID
(108) Enter the RESULT REMARKS, if applicable
(109) Click ADD COPY button if there are more RESULTS to enter

Reports

Upon completing a batch of data entry, select "File" and "Exit." The system will ask the user if s/he wants to print the session. The user has the option to print or not upon exiting. The system will automatically exit upon the completion of the printout. In case of an electrical/computer interruption, the session number that was noted at the beginning of the data entry process is used to print a session for quality assurance purposes, or to retrieve data entry statistics. To print a session select "Print Session Report" from the file menu, enter the session number in the "Enter Session ID" field and click 'OK'. To retrieve a session report, select "View Entry Statistics by Session" from the Query menu, enter the session number in the "Enter Session ID" field and click 'OK'. One or more specific records may be selected for printing when holding down the control key. After selecting the records needed, click on the "Print" button for a printout.

Queries

The QUERY option (See Figure 1) will provide data by SESSION number or by the DATE of entry /modification to either view or print. Select either option and enter the session number or date and click 'OK' to retrieve the report.

There are also options in the query menu that cause the software to generate a report for the number of chemical and species holds or the status of TERRETOX publications. To see species and chemical holds, select "Show Holds Counts" from the Query menu. For publication data, select "Count Unreviewed References" from the Query menu.

Quality Assurance

After the completion of data entry, all data entries are printed. These printouts are quality assured by two ECOTOX staff members, one by data entry staff and the second by reviewing staff. Data printed from the data entry system are compared to data from the original coding sheet. Any errors or corrections noted on the electronic copies are made by data entry staff. These corrections are also proofed in a similar manner to the proofing of original entries, and the process continues until all data are accurate. When proofing, use an ink pen (blue or black), write the date and your initials at the top of the report, and place a check mark next to the location number printed on the report after you have proofed the record. Cross out erroneous data and write the correct information next to it. If you are unsure of an entry, you may write a note next to it or place a question mark next to it to bring it to the attention of a reviewer. It is the responsibility of the reviewer performing the quality assurance to investigate any questions from data entry staff.

APPENDIX A
TERRETOX Data Fields, Type and Remark Abbreviations

(Field numbers refers to Figures 2, 3, 4 and 5)

1ST SCREEN (TEST)			
Field #	**Field Type**	**Field Heading**	**Remark Abbreviation**
1	Numeric	CAS Number	none
2	Valid Code	Grade	GRADE
3	Valid Code	Formulation	FO
4	Text	Characteristics	CHAR
5	Valid Code	Radiolabel	RADIO
6	Numeric	Purity	PURITY
	Check Box	Purpose	none
	Numeric	Carrier or Solvent	CARRIER (ONLY if Solvent has no CAS#)
	Valid Code	Solvent Grade	SOLVGRADE
	Valid Code	Solvent Formulation	SOLVEFO
	Text	Solvent Characteristics	SOLVCHAR
	Valid Code	Solvent Radiolabel	SOLVRADIO
	Numeric	Solvent Purity	SOLVEPURITY
7	Numeric	Species Number	None
8	Valid Code	Organism Source	SOURCE
9	Valid Code	Lifestage	LIFESTG
10	Numeric	Age	AGE
11	Valid code	Age Unit	none
12	Text	Organism Characteristics	OCHAR
13	Valid Code	Test Location	LOC
14	Valid Code	Exposure Type	TYPE
15	Valid Code	Control Type	CONTR
16	Numeric	(Number of Doses) Dose Number	DNUM
17	Numeric	Application Frequency	AP FREQ
18	Valid Code	Application Freq Units	none
19	Numeric	Exposure Duration (mean)	ETIME

20	Numeric	(Exposure Duration) Min	ETIME
21	Numeric	(Exposure Duration) Max	ETIME
22	Valid Code	Exposure Duration Units	none
23	Numeric	Study Duration (mean)	STIME
24	Numeric	(Study Duration) Min	STIME
25	Numeric	(Study Duration) Max	STIME
26	Valid Code	Study Duration Units	none
27	Valid Code	Media Type	MEDIA
28	Text	Soil Type	SOIL
29	Numeric	Soil Texture SA (mean)	none
30	Numeric	(Soil Texture SA) Min	none
31	Numeric	(Soil Texture SA) Max	none
32	Numeric	Soil Texture SI (mean)	none
33	Numeric	(Soil Texture SI) Min	none
34	Numeric	(Soil Texture SI) Max	none
35	Numeric	Soil Texture CL (mean)	none
36	Numeric	(Soil Texture CL) Min	none
37	Numeric	(Soil Texture CL) Max	none
38	Numeric	(Media) CEC (mean)	CEC
39	Numeric	(Media CEC) Min	CEC
40	Numeric	(Media CEC) Max	CEC
41	Valid Code	(Media) CEC Units	none
42	Numeric	Soil (Media) pH (mean)	PH
43	Numeric	(Media pH) Min	PH
44	Numeric	(Media pH) Max	PH
45	Numeric	Soil (Media) OM (mean)	OM
46	Numeric	(Media OM) Min	OM
47	Numeric	(Media OM) Max	OM
48	Valid Code	(Media OM) Units	none
49	Numeric	Soil (Media) Moisture (mean)	MOIST
50	Numeric	(Media Moisture) Min	MOIST
51	Numeric	(Media Moisture) Max	MOIST
52	Valid Code	Measured	none

53	Valid Code	Wet/Dry	none
54	Valid Code	OM Type	none
55	Text	Remarks	none

2ND SCREEN (EXPOSURE)			
Field #	**Field Type**	**Field Heading**	**Remark Abbreviation**
58	Character/ Numeric	Exposure Number	none
59	Numeric	Organism Number	none
60	Valid Code	Sex	SEX
61	Numeric	Dose (mean)	DOSE
62	Numeric	(Dose) Min	DOSE
63	Numeric	(Dose) Max	DOSE
64	Valid Code	(Dose) Statistical Method	none
65	Numeric	Dose Value	DOSE
66	Valid Code	Dose Units	DUNIT
67	Valid Code	Ion	ION
68	Valid Code	Analysis Method	ANALYSIS
69	Text	(General) Remark	none

3rd SCREEN (RESULTS)			
Field #	**Field Type**	**Field Heading**	**Remark Abbreviation**
73	Valid Code	Exposure Number	none
74	Numeric	Sample Number	SAMPN
75	Valid Code	Sample Unit	NUNIT
76	Numeric	Observation Duration (mean)	OTIME
77	Numeric	(Observation Duration) Min	OTIME
78	Numeric	(Observation Duration) Max	OTIME
79	Valid Code	Observation Duration Units	none
80	Valid Code	Effect	EFCT
81	Valid Code	Measurement	MSMT
82	Valid Code	Endpoint	ENDPT
83	Numeric	Result Group	none

84	Valid Code	Significant	none
85	Numeric	Significance Level	none
86	Valid Code	Assign	none
87	Valid Code	Site	RSITE
88	Numeric	Observed Response (mean)	RVALUE
89	Numeric	(Observed Response) Min	RVALUE
90	Numeric	(Observed Response) Max	RVALUE
91	Valid Code	Statistical Method	none
92	Numeric	Observed Response Value	RVALUE
93	Valid Code	Observed Response Units	none
94	Alpha Numeric	Dry Weight Percent	DW
95	Numeric	Percent Lipid	LD
96	Text	Result Remark	none